

Release notes for ENDF/B Development photoat-065\_Tb\_000  
evaluation



October 13, 2016

- checkr Warnings:

1. A previous error halted parsing of the current section  
*MAT=6500, MF= 1, MT=451 (1): Parsing stopped*

```
ERROR(S) FOUND IN MAT=6500, MF= 1, MT=451
SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER      163 TO      195
```

- checkr Errors:

1. A variable is outside the allowed ENDF range  
*MAT=6500, MF= 1, MT=451 (0): Variable range*

```
ERROR(S) FOUND IN MAT=6500, MF= 1, MT=451
MOD =      3 OUT OF RANGE      0 -      1      RECORD NUMBER      163
```

2. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=501 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=6500, MF=23, MT=501
SECTION 23/501 NOT IN DIRECTORY      RECORD NUMBER      197
```

3. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=502 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=6500, MF=23, MT=502
SECTION 23/502 NOT IN DIRECTORY      RECORD NUMBER      1096
```

4. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=504 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=6500, MF=23, MT=504
SECTION 23/504 NOT IN DIRECTORY      RECORD NUMBER      1548
```

5. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=515 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=6500, MF=23, MT=515
SECTION 23/515 NOT IN DIRECTORY      RECORD NUMBER      1589
```

6. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=516 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=6500, MF=23, MT=516
SECTION 23/516 NOT IN DIRECTORY      RECORD NUMBER      1623
```

7. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=517 (0): Directory (b)*

- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=6500, MF=23, MT=517 | RECORD NUMBER | 1677 |
| SECTION 23/517 NOT IN DIRECTORY           |               |      |
8. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=522 (0): Directory (b)*
- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=6500, MF=23, MT=522 | RECORD NUMBER | 1718 |
| SECTION 23/522 NOT IN DIRECTORY           |               |      |
9. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=534 (0): Directory (b)*
- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=6500, MF=23, MT=534 | RECORD NUMBER | 2098 |
| SECTION 23/534 NOT IN DIRECTORY           |               |      |
10. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=535 (0): Directory (b)*
- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=6500, MF=23, MT=535 | RECORD NUMBER | 2119 |
| SECTION 23/535 NOT IN DIRECTORY           |               |      |
11. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=536 (0): Directory (b)*
- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=6500, MF=23, MT=536 | RECORD NUMBER | 2144 |
| SECTION 23/536 NOT IN DIRECTORY           |               |      |
12. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=537 (0): Directory (b)*
- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=6500, MF=23, MT=537 | RECORD NUMBER | 2168 |
| SECTION 23/537 NOT IN DIRECTORY           |               |      |
13. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=538 (0): Directory (b)*
- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=6500, MF=23, MT=538 | RECORD NUMBER | 2193 |
| SECTION 23/538 NOT IN DIRECTORY           |               |      |
14. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=539 (0): Directory (b)*
- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=6500, MF=23, MT=539 | RECORD NUMBER | 2221 |
| SECTION 23/539 NOT IN DIRECTORY           |               |      |
15. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=540 (0): Directory (b)*

- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=6500, MF=23, MT=540 | RECORD NUMBER | 2251 |
| SECTION 23/540 NOT IN DIRECTORY           |               |      |
16. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=541 (0): Directory (b)*
- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=6500, MF=23, MT=541 | RECORD NUMBER | 2281 |
| SECTION 23/541 NOT IN DIRECTORY           |               |      |
17. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=542 (0): Directory (b)*
- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=6500, MF=23, MT=542 | RECORD NUMBER | 2314 |
| SECTION 23/542 NOT IN DIRECTORY           |               |      |
18. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=543 (0): Directory (b)*
- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=6500, MF=23, MT=543 | RECORD NUMBER | 2346 |
| SECTION 23/543 NOT IN DIRECTORY           |               |      |
19. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=544 (0): Directory (b)*
- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=6500, MF=23, MT=544 | RECORD NUMBER | 2376 |
| SECTION 23/544 NOT IN DIRECTORY           |               |      |
20. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=545 (0): Directory (b)*
- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=6500, MF=23, MT=545 | RECORD NUMBER | 2411 |
| SECTION 23/545 NOT IN DIRECTORY           |               |      |
21. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=546 (0): Directory (b)*
- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=6500, MF=23, MT=546 | RECORD NUMBER | 2446 |
| SECTION 23/546 NOT IN DIRECTORY           |               |      |
22. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=547 (0): Directory (b)*
- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=6500, MF=23, MT=547 | RECORD NUMBER | 2502 |
| SECTION 23/547 NOT IN DIRECTORY           |               |      |
23. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=548 (0): Directory (b)*

- |  |   |                    |
|--|---|--------------------|
|  | ERROR(S) FOUND IN MAT=6500, MF=23, MT=548 |                    |
|  | SECTION 23/548 NOT IN DIRECTORY           | RECORD NUMBER 2559 |
24. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=549 (0): Directory (b)*
- |  |   |                    |
|--|---|--------------------|
|  | ERROR(S) FOUND IN MAT=6500, MF=23, MT=549 |                    |
|  | SECTION 23/549 NOT IN DIRECTORY           | RECORD NUMBER 2616 |
25. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=550 (0): Directory (b)*
- |  |   |                    |
|--|---|--------------------|
|  | ERROR(S) FOUND IN MAT=6500, MF=23, MT=550 |                    |
|  | SECTION 23/550 NOT IN DIRECTORY           | RECORD NUMBER 2674 |
26. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=551 (0): Directory (b)*
- |  |   |                    |
|--|---|--------------------|
|  | ERROR(S) FOUND IN MAT=6500, MF=23, MT=551 |                    |
|  | SECTION 23/551 NOT IN DIRECTORY           | RECORD NUMBER 2713 |
27. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=552 (0): Directory (b)*
- |  |   |                    |
|--|---|--------------------|
|  | ERROR(S) FOUND IN MAT=6500, MF=23, MT=552 |                    |
|  | SECTION 23/552 NOT IN DIRECTORY           | RECORD NUMBER 2756 |
28. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=23, MT=559 (0): Directory (b)*
- |  |   |                    |
|--|---|--------------------|
|  | ERROR(S) FOUND IN MAT=6500, MF=23, MT=559 |                    |
|  | SECTION 23/559 NOT IN DIRECTORY           | RECORD NUMBER 2801 |
29. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=27, MT=502 (0): Directory (b)*
- |  |   |                    |
|--|---|--------------------|
|  | ERROR(S) FOUND IN MAT=6500, MF=27, MT=502 |                    |
|  | SECTION 27/502 NOT IN DIRECTORY           | RECORD NUMBER 2848 |
30. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=27, MT=504 (0): Directory (b)*
- |  |   |                    |
|--|---|--------------------|
|  | ERROR(S) FOUND IN MAT=6500, MF=27, MT=504 |                    |
|  | SECTION 27/504 NOT IN DIRECTORY           | RECORD NUMBER 2901 |
31. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=27, MT=505 (0): Directory (b)*

ERROR(S) FOUND IN MAT=6500, MF=27, MT=505  
SECTION 27/505 NOT IN DIRECTORY

RECORD NUMBER 2955

32. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=6500, MF=27, MT=506 (0): Directory (b)*

ERROR(S) FOUND IN MAT=6500, MF=27, MT=506  
SECTION 27/506 NOT IN DIRECTORY

RECORD NUMBER 3145

• fudge-4.0 Warnings:

1. generic warning message  
*reaction label 0: Tb + gamma [coherent] / Product: gamma (Error # 0): Warning*

WARNING: coherentScattering is not a valid distribution component for 2-body reaction

2. FIXME: Generic fudge unimplemented message  
*reaction label 0: Tb + gamma [coherent] / Product: gamma (Error # 2): Generic unimp (c)*

WARNING: Checking not yet implemented for pointwise type data

3. generic warning message  
*reaction label 1: Tb + gamma [incoherent] / Product: gamma (Error # 0): Warning*

WARNING: incoherentScattering is not a valid distribution component for 2-body reaction

4. FIXME: Generic fudge unimplemented message  
*reaction label 1: Tb + gamma [incoherent] / Product: gamma (Error # 2): Generic unimp (c)*

WARNING: Checking not yet implemented for piecewise type data

5. Cross sections do not correctly sum up properly according to an ENDF (or equivalent)  
sumrule  
*summedReaction label 24: total (Error # 0): Sumrule*

WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 100.00%

6. Cross sections do not correctly sum up properly according to an ENDF (or equivalent)  
sumrule  
*summedReaction label 26: photoelectric absorption (Error # 0): Sumrule*

WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 80.38%

• fudge-4.0 Errors:

1. Calculated and tabulated thresholds don't agree  
*reaction label 0: Tb + gamma [coherent] / Cross section: (Error # 0): Threshold mismatch*

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1. eV!

2. 2-body reaction not in center-of-mass frame  
*reaction label 0: Tb + gamma [coherent] / Product: gamma (Error # 1): 2-body not in COM*  

WARNING: 2-body reaction not in center-of-mass frame!
3. Calculated and tabulated thresholds don't agree  
*reaction label 1: Tb + gamma [incoherent] / Cross section: (Error # 0): Threshold mismatch*  

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1. eV!
4. 2-body reaction not in center-of-mass frame  
*reaction label 1: Tb + gamma [incoherent] / Product: gamma (Error # 1): 2-body not in COM*  

WARNING: 2-body reaction not in center-of-mass frame!
5. Energy range of data set does not match cross section range  
*reaction label 1: Tb + gamma [incoherent] / Product: gamma / Distribution incoherentScattering - piecewise: (Error # 0): Domain mismatch (a)*  

WARNING: Domain doesn't match the cross section domain: (0.0 -> 1000000000.0) vs (1.0 -> 1e+11)
6. Calculated and tabulated thresholds don't agree  
*reaction label 2: e- + e+ + Tb [electron field] / Cross section: (Error # 0): Threshold mismatch*  

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 2.044e6 eV!
7. Calculated and tabulated thresholds don't agree  
*reaction label 3: e- + e+ + Tb [nuclear field] / Cross section: (Error # 0): Threshold mismatch*  

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1.022e6 eV!
8. Calculated and tabulated thresholds don't agree  
*reaction label 4: e- + Tb1s1/2 / Cross section: (Error # 0): Threshold mismatch*  

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 52060. eV!
9. Calculated and tabulated thresholds don't agree  
*reaction label 5: e- + Tb2s1/2 / Cross section: (Error # 0): Threshold mismatch*  

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 8673.1 eV!
10. Calculated and tabulated thresholds don't agree  
*reaction label 6: e- + Tb2p1/2 / Cross section: (Error # 0): Threshold mismatch*  

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 8260.9 eV!
11. Calculated and tabulated thresholds don't agree  
*reaction label 7: e- + Tb2p3/2 / Cross section: (Error # 0): Threshold mismatch*  

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 7505.3 eV!

12. Calculated and tabulated thresholds don't agree  
*reaction label 8:  $e^- + Tb3s1/2$  / Cross section: (Error # 0): Threshold mismatch*  
  
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1935.8 eV!
13. Calculated and tabulated thresholds don't agree  
*reaction label 9:  $e^- + Tb3p1/2$  / Cross section: (Error # 0): Threshold mismatch*  
  
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1753.4 eV!
14. Calculated and tabulated thresholds don't agree  
*reaction label 10:  $e^- + Tb3p3/2$  / Cross section: (Error # 0): Threshold mismatch*  
  
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1596.8 eV!
15. Calculated and tabulated thresholds don't agree  
*reaction label 11:  $e^- + Tb3d3/2$  / Cross section: (Error # 0): Threshold mismatch*  
  
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1279. eV!
16. Calculated and tabulated thresholds don't agree  
*reaction label 12:  $e^- + Tb3d5/2$  / Cross section: (Error # 0): Threshold mismatch*  
  
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1244.6 eV!
17. Calculated and tabulated thresholds don't agree  
*reaction label 13:  $e^- + Tb4s1/2$  / Cross section: (Error # 0): Threshold mismatch*  
  
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 388.39 eV!
18. Calculated and tabulated thresholds don't agree  
*reaction label 14:  $e^- + Tb4p1/2$  / Cross section: (Error # 0): Threshold mismatch*  
  
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 316. eV!
19. Calculated and tabulated thresholds don't agree  
*reaction label 15:  $e^- + Tb4p3/2$  / Cross section: (Error # 0): Threshold mismatch*  
  
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 281.04 eV!
20. Calculated and tabulated thresholds don't agree  
*reaction label 16:  $e^- + Tb4d3/2$  / Cross section: (Error # 0): Threshold mismatch*  
  
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 160.59 eV!
21. Calculated and tabulated thresholds don't agree  
*reaction label 17:  $e^- + Tb4d5/2$  / Cross section: (Error # 0): Threshold mismatch*  
  
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 154.29 eV!
22. Calculated and tabulated thresholds don't agree  
*reaction label 18:  $e^- + Tb4f5/2$  / Cross section: (Error # 0): Threshold mismatch*  
  
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 10.39 eV!



23. Calculated and tabulated thresholds don't agree  
*reaction label 19:  $e^- + Tb4f7/2$  / Cross section: (Error # 0): Threshold mismatch*  
  
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 9.529999999999999 eV!
24. Calculated and tabulated thresholds don't agree  
*reaction label 20:  $e^- + Tb5s1/2$  / Cross section: (Error # 0): Threshold mismatch*  
  
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 52.17 eV!
25. Calculated and tabulated thresholds don't agree  
*reaction label 21:  $e^- + Tb5p1/2$  / Cross section: (Error # 0): Threshold mismatch*  
  
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 32.24 eV!
26. Calculated and tabulated thresholds don't agree  
*reaction label 22:  $e^- + Tb5p3/2$  / Cross section: (Error # 0): Threshold mismatch*  
  
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 27.59 eV!
27. Calculated and tabulated thresholds don't agree  
*reaction label 23:  $e^- + Tb6s1/2$  / Cross section: (Error # 0): Threshold mismatch*  
  
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 5.29 eV!
28. Calculated and tabulated thresholds don't agree  
*summedReaction label 24: total / Cross section: (Error # 0): Threshold mismatch*  
  
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1. eV!
29. Calculated and tabulated thresholds don't agree  
*summedReaction label 25: pair product / Cross section: (Error # 0): Threshold mismatch*  
  
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1.022e6 eV!
30. Calculated and tabulated thresholds don't agree  
*summedReaction label 26: photoelectric absorption / Cross section: (Error # 0): Threshold mismatch*  
  
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 5.29 eV!

- **xsectplotter** Warnings:

1. Encountered runtime warning in xsectplotter or Fudge or matplotlib  
*Error: RuntimeWarning*

```
stderr while processing crossSection
```

```
/usr/local/lib/python2.7/site-packages/matplotlib-1.3.1-py2.7-linux-x86_64.egg/matplotlib/pyplot.py:412: RuntimeWarning:
... [3 more lines]
```